Docket No.: 29985/03-006
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: James Weldon, et al.

Application No.: 10/754,362 Confirmation No.: 7606

Filed: January 8, 2004 Art Unit: 3731

For: Suturing Device for Implantable Device Examiner: Timothy J. Neal

RESPONSE TO OFFICE ACTION DATED JANUARY 25, 2007

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

This paper is submitted in response to the Restriction Requirement having a mail date of January 25, 2007, setting a one-month period for response. Please amend the application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 13 of this paper.

Listing of the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Previously Presented) A fixation system for use in a body cavity, comprising:

an implantable device having no outwardly biasing structure associated therewith;

a plurality of resilient delivery members movable between a generally longitudinal delivery position and a radially expanded deployment position, the delivery members defining a delivery channel therein with a distal opening, each delivery member having a distal end formed with a blunt profile adapted to engage the implantable device;

a fixation component slidably disposed in each of the delivery channels; and

a pusher slidably disposed in each of the delivery channels to push the fixation component in each delivery channel.

2. (Original) The fixation system of claim 1 and further comprising:

a delivery sheath slidable over the plurality of resilient delivery members.

3. (Original) The fixation system of claim 1 wherein the delivery members define the delivery channel as a closed lumen therein with the distal opening.

4. (Original) The fixation system of claim 1 wherein each fixation component comprises:

a first fixation member;

a second fixation member; and

a tether connecting the first and second fixation members.

5. (Original) The fixation system of claim 4 wherein the delivery members, when in the deployed position, urge the implantable device against a wall of the body cavity.

6. (Original) The fixation system of claim 5 wherein the first fixation member is disposed to pierce the implantable device and a wall of the body cavity when advanced from the delivery channel by the pusher.

7. (Original) The fixation system of claim 6 wherein the first fixation member has a sharpened end for piercing the implantable device and body cavity wall.

8. (Original) The fixation system of claim 6 wherein the first and second fixation members are arranged in a generally longitudinally aligned orientation when in the delivery channel.

9. (Original) The fixation system of claim 8 wherein one of the first and second fixation members are releasably connected to the pusher.

10. (Original) The fixation system of claim 2 and further comprising:

an inner sheath, the plurality of delivery members being arranged generally radially about the inner sheath.

11. (Original) The fixation system of claim 10 wherein the implantable device comprises:

a vascular graft.

12. (Original) The fixation system of claim 11 and further comprising:

a releasable fixation member releasably fixing the vascular graft to a distal end of the inner sheath.

13. (Original) The fixation system of claim 10 and further comprising:

an expandable member expandable from a contracted position closely proximate an exterior of the delivery sheath to an expanded position urging the vascular graft against the wall of the body cavity.

14. (Original) The fixation system of claim 13 wherein the expandable member is positioned at a distal end of the delivery sheath.

15. (Original) The fixation system of claim 14 wherein the expandable member has a distal end thereof shaped in the expanded position to conform to a shape of the delivery members in the deployment position.

16. (Previously Presented) The fixation system of claim 2 wherein each of the delivery members defines an associated delivery channel as a channel having a slot communicating with an exterior of the delivery member.

17. (Original) The fixation system of claim 16 wherein the fixation component comprises:

a piercing member with a tether attached thereto.

18. (Original) The fixation system of claim 17 wherein pairs of piercing members in adjacent delivery members are tethered together by the tether.

19. (Original) The fixation system of claim 18 wherein the tether is oriented to ride through the slots in the adjacent delivery members as the pushers advance the piercing members through the channel in the delivery members.

20. (Original) The fixation system of claim 19 wherein the pairs of piercing members are advanced through the implantable device and through a wall of the body cavity, the piercing members pulling ends of the tether through the implantable device and through the wall of the body cavity.

21. (Original) The fixation system of claim 1 and further comprising:

a radio frequency (RF) energy source connected to the pushers to apply RF energy to a wall of the body cavity through the pushers and the fixation components.

22. (Original) The fixation system of claim 1 wherein the body cavity comprises a vascular lumen in a region of an aneurysm.

23. (Original) The fixation system of claim 1 wherein the delivery members are configured to exert outwardly directed pressure on an inner wall of the implantable device at substantially uniformly spaced areas, when in the deployed position.

24. (Withdrawn) A method of fixing an implantable device to a wall of a body cavity, the implantable device being provided in a radially contracted configuration but deployable to a radially expanded configuration, comprising:

advancing a plurality of resilient delivery members into the implantable device disposed in the body cavity with the implantable device in the radially contracted configuration;

radially expanding the delivery members until the distal ends of the delivery members engage and drive the implantable device from the radially contracted configuration to the radially expanded configuration, thereby to urge the implantable device against the wall of the body cavity; and

advancing a fixation component from within each of the delivery members by inserting a pusher distally into each of the delivery members until a portion of each fixation component pierces the implantable device and the wall of the body cavity.

25. (Withdrawn) The method of claim 24 wherein radially expanding comprises:

removing the delivery members from within a delivery sheath, to allow the delivery members to move to a radially expanded position.

26. (Withdrawn) The method of claim 24 wherein advancing a fixation component comprises:

sliding a plunger in each of the delivery members to push the fixation components in the delivery members.

27. (Withdrawn) The method of claim 24 wherein advancing a plurality of resilient delivery members comprises:

advancing a tracking sheath to a treatment site in the body cavity; and

advancing the implantable device, along with the tracking sheath, to the treatment site.

28. (Withdrawn) The method of claim 27 wherein advancing a plurality of resilient delivery members comprises:

sliding the plurality of delivery members in tracking relation to the tracking sheath to the treatment site.

29. (Withdrawn) The method of claim 28 wherein the implantable device includes a vascular graft and wherein sliding the plurality of delivery members comprises:

unwrapping the vascular graft to allow radial expansion of an end of the vascular graft.

30. (Withdrawn) The method of claim 29 wherein sliding the plurality of delivery members comprises:

advancing the delivery members within the vascular graft.

31. (Withdrawn) The method of claim 30 wherein advancing the implantable device comprises:

maintaining a connection between the tracking sheath and a distal end of the vascular graft; and

releasing the connection prior to radially expanding the delivery members.

32. (Withdrawn) The method of claim 25 and further comprising:

prior to removing the delivery members from the delivery sheath, expanding an expandable member to urge the implantable device against the wall of the body cavity.

33. (Withdrawn) The method of claim 32 wherein the expandable member comprises an inflatable member and wherein expanding the expandable member comprises:

inflating the inflatable member to exert radially directed pressure on the implantable device against the wall of the body cavity.

34. (Withdrawn) The method of claim 32 wherein expanding an expandable member comprises:

expanding the expandable member into a shape conforming to a shape of the radially expanded delivery members.

35. (Withdrawn) The method of claim 24 and further comprising:

applying radio frequency (RF) energy to the wall of the body cavity through the fixation component prior to piercing the implantable device.

36. (Withdrawn) The method of claim 24 wherein each delivery member includes an associated channel therethrough and a slot communicating from the channel to an exterior of the associated delivery member, and wherein advancing a fixation component comprises:

advancing pairs of needles, attached with a length of suture material, through the channels in adjacent delivery members.

37. (Withdrawn) The method of claim 36 wherein advancing pairs of needles comprises:

advancing the needles through the implantable device and the walls of the body cavity.

38. (Withdrawn) The method of claim 37 and further comprising:

tying ends of the suture material carried by the needles, external to the body cavity.

39. (Withdrawn) The method of claim 38 wherein tying comprises:

laparoscopically accessing a treatment site external to the body cavity.

40. (Withdrawn) The method of claim 38 wherein the delivery members comprise a plurality of pairs of delivery members and wherein advancing pairs of needles comprises:

advancing a plurality of pairs of needles through the channels.

41. (Withdrawn) The method of claim 40 wherein tying comprises:

tying a plurality of knots in a plurality of ends of suture material carried by the plurality of pairs of needles.

42. (Withdrawn) The method of claim 24 and further comprising:

loading the implantable device about the delivery members, prior to advancing.

43. (Withdrawn) The method of claim 42 wherein loading comprises:

folding the implantable device about the delivery members at substantially uniformly spaced locations along the inner periphery of the implantable device.

44. (Previously Presented) A fixation system for use in a wall of a blood vessel having an aneurysm, comprising:

a vascular graft sized to extend across the aneurysm and having no outwardly biasing structure associated therewith;

an array of delivery tubes advancable through a center lumen of the graft, each delivery member having a distal end formed with a blunt profile, the array of tubes being movable between a radially contracted position and a deployment position in which the distal ends of the delivery tubes expand radially to urge the graft against the wall; and

a plurality of fixation components, one component slidably disposed in each delivery tube, the fixation components slidable out of the delivery tubes to connect the graft to the wall of the blood vessel.

45. (Original) The fixation system of claim 44 and further comprising:

a plurality of plungers, one plunger slidably disposed in each delivery tube to advance the fixation components out of the delivery tubes.

46. (Original) The fixation system of claim 44 and further comprising:

a delivery sheath slidable over the array of delivery tubes, the delivery sheath holding the delivery tubes in the contracted position and removal of the delivery sheath allowing movement of the delivery tubes into the deployment position.

REMARKS

In response to the restriction requirement set forth in the Office Action mailed January 25, 2007, applicant hereby elects the apparatus claims of Group I, without traverse. Group I as identified by the Examiner includes claims 1-23 and 44-46.

It is submitted that the present application is in good and proper form for allowance. A favorable action on the part of the Examiner is respectfully solicited.

If, in the opinion of the Examiner a telephone conference would expedite prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Dated: February 22, 2007

Respectfully submitted,

By 

Brent E. Matthias
Registration No.: 41,974
MILLER, MATTHIAS & HULL
One North Franklin Street
Suite 2350
Chicago, Illinois 60606
(312) 977-9904
Attorney for Applicant